Patent claims

1. Measuring arrangement for testing workpieces, having at least one optical fiber wherein each optical fiber is designed as a Bragg grating sensor, and in wherein each optical fiber is arranged in a region of a surface of the workpiece.

2. The measuring arrangement according to Claim 1, wherein each optical fiber designed as a Bragg grating sensor is mounted directly on the surface of the workpiece.

3. The measuring arrangement according to Claim 1, wherein each optical fiber designed as a Bragg grating sensor is integrated in the surface of the workpiece.

4. The measuring arrangement according to Claim 3, wherein recesses are introduced into the surface of the workpiece said recesses reach having a breadth and depth matched to a diameter of the optical fibers designed as Bragg grating sensors, and wherein said optical fibers are arranged in the recesses.

5. The measuring arrangement according to claim 1 wherein a plurality of said at least one optical fibers designed as Bragg grating sensors are arranged in a geometrical configuration different from other ones of said at least one optical fiber on a surface of the workpiece.

6. The measurement arrangement according to Claim 5, wherein said plurality of optical fibers designed as Bragg grating sensors are arranged with curvatures which are different from said other ones of said at least one optical fiber on the surface of the workpiece.

7. The measuring arrangement according to Claim 5 wherein appellant one optical fibers designed as a Bragg grating sensor is arranged without curvature in the form of a straight line on the surface of the workpiece.

8. The measuring arrangement according to claim 5, wherein at least one, optical fiber designed as a Bragg grating sensor is arranged in the form of an angular straight line on the surface of the workpiece in such a way that a first section of the fiber is angled off from a second section thereof.

9. The measuring arrangement according to claim 5, wherein at least one optical fiber designed as a Bragg grating sensor is arranged on the surface of the workpiece in such a way that the at least one fiber has at least one of a curved section of approximately 90° and a curved section of approximately 180° with, neighbouring sections of the corresponding optical running approximately parallel to one another in the curved section of approximately 180°.

10. The measuring arrangement according to claim 1, wherein the workpiece is designed as a dynamically loaded component.

11. Use of a measuring arrangement according to claim 1 to determine the properties of a dynamically loaded component.

12. Method for metrological instrumentation of workpieces, at least one optical fiber designed as a Bragg grating sensor is arranged in the region of a surface of the workpiece.

13. The method according to Claim 12, wherein each optical fiber designed as a Bragg grating sensor is mounted, directly on the surface of the workpiece.

14. The method according to Claim 12, wherein each of said at least one optical fiber designed as a Bragg grating sensor is integrated in the surface of the workpiece with, recesses being introduced into the surface of the workpiece whose width and depth are matched to the diameter of the optical fibers designed as Bragg grating sensors, wherein an optical fiber is arranged in the recesses.

15. The method according to claim 12, wherein a plurality of said at least one optical fiber designed as Bragg grating sensors are arranged in a different geometrical configuration.

16. The measuring arrangement according to claim 2, wherein said each optical fiber is bonded directly on the surface of the workpiece.

17. The measuring arrangement according to claim 10, wherein the workpiece is designed as a blade of a turbine or housing of a turbine.

18. The method according to claim 13, wherein said each optical fiber is bonded directly on the surface of the workpiece.

19. The method according to claim 15, wherein said different geometrical configuration is a curvature.

20. Use of a measuring arrangement according to claim 11, wherein said dynamically loaded component is a blade of a turbine or a housing of a turbine.